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Customer No. : 31561
Application No.: 10/707,825
Docket NO.:10786-US-PA

CLAIM AMENDMENTS

Please amend the claims according to the following listing of claims and substitute it for all prior versions and listings of claims in the application.

1. (currently amended) A flip-chip gold bump structure for bonding with a copper-containing solder material, the gold bump structure being formed on a wafer, the structure comprising:

at least one gold bump; and

a nickel layer reaction barrier layer on the gold bump, wherein the reaction barrier layer comprising —and— a copper layer disposed on the a nickel layer.

2. (original) The flip-chip gold bump structure of claim 1, wherein the nickel layer has a thickness about from 0.1 μm to about 20 μm .

3. (original) The flip-chip gold bump structure of claim 1, wherein the copper layer has a thickness about from 0.1 μm to about 10 μm .

4. (original) The flip-chip gold bump structure of claim 1, wherein the gold bump has a height about from 3 μm to about 150 μm .

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5. (currently amended) A flip-chip package structure adapted to connect a chip and a chip substrate, the structure comprising:

at least one gold bump on the chip;

a nickel layer on the gold bump; and

a solder containing copper on the nickel layer for connecting the chip and the chip substrate.

6. (original) The flip-chip package structure of claim 5, wherein the solder containing copper includes a solder alloy.

7. (original) The flip-chip package structure of claim 6, wherein copper in the solder alloy is from about 0.7 wt. % to about 3.0 wt. %.

8. (original) The flip-chip package structure of claim 5, wherein the nickel layer has a thickness about from 0.1 μm to about 20 μm .

9. (original) The flip-chip package structure of claim 5, wherein the gold bump has a height about from 3 μm to about 150 μm .

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10. (currently amended) A method of fabricating a flip-chip gold bump structure for bonding with a copper-containing solder material, the gold bump structure being formed on a wafer, the method comprising:

forming at least one gold bump on the wafer; and

forming a reaction barrier layer on the gold bump, the reaction barrier layer comprising a nickel layer on the gold bump; and forming a copper layer formed on the nickel layer.

11. (original) The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the gold bump includes electroplating.

12. (original) The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the gold bump includes electroless plating.

13. (original) The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the nickel layer on the gold bump includes electroplating.

14. (original) The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the nickel layer on the gold bump includes electroless plating.

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15. The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the copper layer on the nickel layer includes electroplating.

16. The method of fabricating a flip-chip gold bump structure of claim 10, wherein the step of forming the copper layer on the nickel layer includes electroless plating.

17. (currently) A method of fabricating a flip-chip package adapted to connect a chip and a chip substrate, the method comprising:

forming at least one gold bump on a wafer;

forming a nickel layer on the gold bump;

sawing the wafer;

forming a solder containing copper on the chip substrate; and

aligning the gold bump to ~~the solder containing~~ a copper-containing solder.

18. (original) The method of fabricating a flip-chip package of claim 17, wherein the step of forming the gold bump on the wafer includes electroplating.

19. (original) The method of fabricating a flip-chip package of claim 17, wherein the step of forming the gold bump on the wafer includes electroless plating.

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20. (original) The method of fabricating a flip-chip gold bump structure of claim 17, wherein the step of forming the nickel layer on the gold bump includes electroplating.

21. (original) The method of fabricating a flip-chip gold bump structure of claim 17, wherein the step of forming the nickel layer on the gold bump includes electroless plating.

22. (original) The method of fabricating a flip-chip gold bump structure of claim 17, further comprising a reflow process after aligning the gold bump to the solder containing copper.

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